

Remarks

As an initial matter, Applicant filed an I.D.S. on June 7, 2006, which was not considered in connection with the Office Action mailed on June 15, 2006. Applicant respectfully requests the Examiner to consider the I.D.S. references, and prepare and mail a miscellaneous correspondence evidencing such consideration.

This Application has been carefully reviewed in light of the Office Action mailed June 15, 2006. At the time, claims 1, 3, 5-11, 13, 14 and 26-30 were pending in the application. In the Office Action, claims 1, 3, 5-11, 13, 14 and 26-30 were rejected. By this paper, Applicant has amended claims 1, 27 and 29 and has added claim 31 to clarify the subject matter in which the Applicant claims as its invention and to advance prosecution of this case. No new matter has been introduced by this Amendment. Applicant does not admit that the amendments are necessary as the result of any cited art or Examiner objections or rejections. Applicant respectfully requests reconsideration of the above-identified application in view of the following remarks.

Claims 1, 3, 5-11, 13, 14 and 26 stand rejected as being unpatentable over *Schneider* (U.S. Patent No. 3,415,364) in view of *Helsemans et al.* (U.S. Patent No. 5,418,261) and *Rosthauser* (U.S. Patent No. 6,224,800 B1).

As an initial matter, Applicant thanks the Examiner for his insightful comments during the telephonic interview conducted on July 24, 2006. Applicant has carefully considered the Examiner's input in drafting these remarks.

According to the Applicant's understanding, the Examiner's rejection is premised on the hydrophobicity of an isocyanate contributing to the hydrophobicity of a polyurethane foam produced by reacting an isocyanate and a polyol. Applicant respectfully traverses the Examiner's premise because the isocyanate and the polyol are consumed by the reaction to produce the polyurethane foam. In other words, after the reaction occurs, the

isocyanate and the polyol are no longer present in meaningful amounts. Therefore, the hydrophobicity of an isocyanate is not relevant, since the isocyanate is not present in the resulting reaction product, i.e. polyurethane foam.

The Examiner has improperly combined the alleged teaching of a hydrophobic isocyanate (*Rosthauser*) with the alleged teaching of a hydrophilic foam product (*Helsemans et al.*). This combination improperly attributes an alleged characteristic of a reactant (isocyanate) with the resulting characteristic of the product (foam). For at least this reason, Applicant respectfully requests the Examiner to withdraw this rejection.

Moreover, the proposed *Schneider-Helsemans et al.-Rosthauser* combination does not teach, disclose or suggest the pending claims. Applicant has amended claims 1, 27 and 29, without waiver or prejudice, to clarify that the claimed SMF structure is a polyurethane foam “being the reaction product of” reacting an isocyanate and a polyol. The proposed combination does not teach, disclose, or suggest a polyurethane foam reaction product that is hydrophobic, as claimed. *Helsemans et al.* discloses a hydrophilic foam. See Remarks of Amendment, dated April 17, 2006, pp. 8 and 9. According to the Examiner, *Rosthauser* teaches a hydrophobic isocyanate. Neither reference nor the combination of these references teach, disclose or suggest a hydrophobic polyurethane foam product. *Schneider* does not cure the defective teachings of the proposed *Helsemans et al.-Rosthauser* combination. For at least this reason, Applicant respectfully requests the Examiner to withdraw this rejection of claim 1 (and depending claims 3, 5-11, 13, 14, and 26), claim 27 (and depending claim 28), and claim 29 (and depending claim 30).

Further, Applicant has added claim 31 to further illustrate the patentable nature of the Applicant’s invention. Claim 31 recites “wherein the polyurethane foam is essentially free of the isocyanate.” Claim 31 further clarifies that the isocyanate reactant is not present in the polyurethane foam product in any meaningful amount. Claim 31 is patentable over the proposed combination and the other art of record.

Claims 27 and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Schneider* in view of *Helsemans et al.*, and further in view of *Hayashi et al.* (U.S. Patent No. 5,049,591). The Examiner admits that *Schneider*, *Helsemans et al.* and *Rosthauser* fail to disclose a shape-memory foam based on an aromatic polyester polyol reacted with an isocyanate. The Examiner attempts to cure this defect by combining the teachings of *Hayashi et al.* with the teachings of *Schneider*, *Helsemans et al.* and *Rosthauser*. Applicant respectfully traverses this rejection because the proposed combination, assuming that the references are properly combinable, does not teach, disclose, or suggest the claimed invention.

For instance, the proposed combination does not teach, disclose or suggest a crosslinked SMF structure based on aromatic polyester polyols, as recited in pending claims 27 and 28. The Examiner admits that *Schneider*, *Helsemans et al.* and *Rosthauser* fail to disclose a shape-memory foam based on an aromatic polyester polyol reacted with an isocyanate. *Hayashi et al.* fails to cure this defect. Pending claims 27 and 28 recited a crosslinked SMF, which is not taught, disclosed or suggested by *Hayashi et al.* *Hayashi et al.* provides a shape-memory foam composed of a difunctional diisocyanate, a difunctional polyol, and a difunctional chain extender containing active hydrogen (col. 2, ll. 22-26). The difunctional nature of all components used in preparation of the shape-memory foams ensure that the resulting structure is thermoplastic, without any crosslinks, thereby providing a crystalline linear material. To support preparation of a thermoplastic foam, *Hayashi et al.* shows that the difunctional polyols are represented by the general formula OH-R'-OH (col. 2, ll. 60-63). Furthermore, to ensure that no crosslinking has occurred, *Hayashi et al.* states “[t]he polyurethane foam is made up of polymer chains having substantially no excess isocyanate groups at their terminals and hence contains no allophonate links which form rigid crosslinks.” (col. 2, ll. 34-39). Furthermore, *Hayashi et al.* states that “this means that the polyurethane foam is a thermoplastic chain polymer which can be processed upon heating.” (col. 2, ll. 34-39). Crosslinked polyurethanes can not be processed upon heating. The teachings of *Hayashi et al.* are limited to a thermoplastic structure. Contrarily, claims 27 and 28 recite a crosslinked SMF composition based on aromatic polyester polyols. For at least this

reason, claims 27 and 28 are patentable over the proposed combination and the other art of record.

Claims 29 and 30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Schneider* in view of *Helsemans et al.* and *Rosthauser*, and further in view of *Chaffanjon et al.* (U.S. Patent No. 5,594,097). The Examiner admits that *Schneider*, *Helsemans et al.* and *Rosthauser* fail to disclose a shape-memory foam based on polycarbonate polyol reacted with an isocyanate. The Examiner attempts to cure this defect by combining the teachings of *Chaffanjon et al.* with the teachings of *Schneider*, *Helsemans et al.* and *Rosthauser*. Applicant respectfully traverses this rejection because the proposed combination, assuming that they are properly combinable, does not teach, disclose, or suggest the claimed invention.

For instance, the proposed combination does not teach, disclose or suggest a SMF composition having a shape memory characteristic based on polycarbonate polyols, as recited in claims 29 and 30. *Chaffanjon et al.* provides a polyol and a process for preparing a flexible polyurethane foam, from a specific class of polyols (col. 1, ll. 10-12). *Chaffanjon et al.* provides that flexible polyurethane foams refer to cellular product exhibiting substantial shape recovery after deformation (col. 3, ll. 13-15). *Chaffanjon et al.* does not teach or suggest the claimed shape memory characteristic, i.e. that the foam can be compressed and when cooled below the T_g , that retains the compressed shape without any aid from an outside force, and that regains substantially its original shape after heating to above the T_g . Contrarily, claims 29 and 30 recite a SMF composition having a shape memory characteristic based on polycarbonate polyols. For at least this reason, claims 29 and 30 are patentable over the proposed combination and the other art of record.

Conclusion

Applicant has made a genuine effort to respond to the Examiner's rejections in advancing the prosecution of this case. Applicant believes all formal and substantive requirements for patentability have been met and that this case is in condition for allowance, which action is respectfully requested.

Please charge our Deposit Account No. 02-3978 in the amount of \$225.00 to cover the 2 Month Extension of Time Fee. Please charge any additional fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978.

If the Examiner feels that a telephone conference would advance prosecution of this Application in any manner, the Examiner is invited to contact Matthew M. Jakubowski, Attorney for Applicant, at Examiner's convenience at (248) 358-4400.

Respectfully submitted,
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